ARTISTIC ANATOMY

OF THE HUMAN FIGURE.

BY

HENRY WARREN,

PROFESSOR OF DRAWING AT QUEEN'S COLLEGE, LONDON,

AND PRESIDENT OF THE NEW SOCIETY OF PAINTERS IN WATER-COLOURS.

With Twenty-Three Illustrations,

Drawn on Wood by the Author, and Engraved by Walter G. Mason.

Ars probat artificem.

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PRICE ONE SHILLING.

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Printed by Schulze and Co., 13, Poland Street.

PREFACE.

The Author has endeavoured to make this little work sufficiently comprehensive to be useful to the general student in the art of drawing the human figure.

In reference to the plates, it may be observed that the bones are marked by letters, the muscles by numerals. To the same bones and the same muscles,—wherever they may occur through each section,—the same letters or numbers will apply.

The direction of the lines of shading in the plates is made to correspond to the direction of the muscular fibres; the consideration of this being necessary to that dimpling and folding of the outer skin, which painters more than sculptors love to indicate,—perhaps too freely.

NOTES.

The general construction of the human frame is as follows:

The osseous (bony) structure is first overspread, especially at the joints, by a tough covering called periosteum.

On this are placed the different layers of muscles, enclosed in thin sheaths, with their various aponeuroses, or semitendinous portions.

The muscles are partly formed of fleshy fibres, taking various directions, according to their requirements, and partly of tendinous or sinewy portions.

The whole is enwrapped by the adipose (*fatty*) membrane, vulgarly called the skin.

Through this pliable and soft but thick clothing, the actions of the muscles are visible, more or less according to their powerful development or otherwise; but it is at all times difficult to detect their exact forms and directions, and it is a vulgar error to display them in exaggeration. The general sweeping lines of the figure

are to be first and chiefly considered, the poise and proportion of the skeleton being the ground for this.

An affectation of grace is a common stumbling-block to the student, while a rigid copying of the dead form to represent the living and moving figure, is no less an error.

The antique statues are always the best models; and with such aids, and a little study of the anatomy of the human form, together with a knowledge and due consideration of its perspective changes, the difficulties of drawing the human figure will need but moderate practice to overcome.

INSTRUCTIONS

IN

ARTISTIC ANATOMY.

PLATE I.

THE SKELETON.

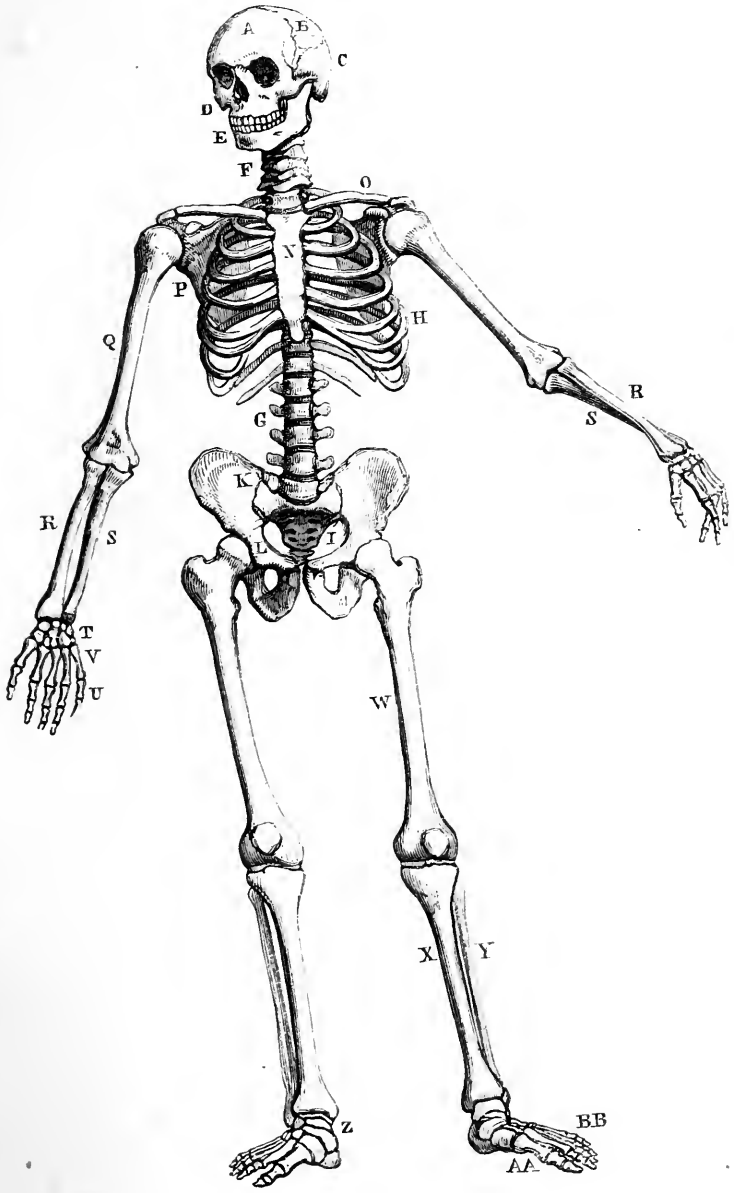
A. Os Frontis—the frontal bone.
B. Os parietale.
C. Os temporum.
D. Ossa maxillaria superiora—bones of the upper jaw.
E. Maxilla inferior—the lower jaw.
F. The seven vertebræ of the neck.
G. The vertebral column.
H. The seven true and five false ribs.
I. Os sacrum.
K. Os ilium.
L. Os ischium.
M. Os pubis.
N. Sternum—breast bone.
O. Clavicula—collar bone.

P. Scapula—shoulder blade.
Q. Humerus or brachium—upper arm bone.
R. Radius.
S. Ulna.
T. Bones of the carpus—wrist bones.
V. Bones of the metacarpus.
U. Bones of the fingers.
W. Femur—thigh bone.
X. Tibia.
Y. Fibula.
Z. Bones of the tarsus.
AA. Bones of the metatarsus.
BB. Bones of the toes.

THE SKELETON.

By the skeleton is to be understood the framework of the edifice, Man; the beams and timbers, as it were, upon which the superstructure depends. The skeleton determines the size, power, and capabilities of the animal, and is formed of a material sufficiently hard and solid for all the mechanical powers of sustension and retension, columnar and lateral support, encasement and leverage. The skeleton is a combination of two hundred bones, all of which it is, however, not essential to give in a little work like the present; and, indeed, if we take into consideration the fact, that most of them are to be reckoned in pairs or in clusters, our number will be considerably diminished, as far as nomenclature is concerned.

PLATE I.



Of the forms of bones we have great variety, some are triangular in section, others quadrilateral, others again round; and in some bones all these forms are combined, according to the uses and requirements of their different portions.

So great indeed is the difference of form throughout the bony structure, that it were as useless as tedious to enlarge upon it here; and I shall content myself with the general distinctions given them by anatomists, as long, broad, and short bones.

The combined mass or structure is simply divided into the trunk and extremities. The former, the trunk, is composed of the head, the thorax, or ribs, with the sternum or breastbone, the bones of the hips and the great vertebral column or back bone; the latter, the extremities, are designated as superior and inferior, and are the arms and the legs.

The bones of the head, divided into the cranium and the face, will be given more at large further on.

The bones composing the spine or vertebral column are twenty four in number. Seven are given to the neck—*cervical,* twelve to the back or ribs—*dorsal,* and five to the loins—*lumbar.* The combined column, with its intervening cartilages, measures on an average from two feet four inches to two feet eight inches, independently of its base the os sacrum and the terminating bones of the coccyx. It has, when viewed in profile, a curved or

serpentine form. In the neck it is slightly concave, in the back convex, and in the loins again concave; approaching and united with the os sacrum, it again becomes convex. There is also a slight curvature as seen from behind or in front, its inclination being towards the left side. The intention of this deviation from the straight line is not satisfactorily explained.

Each vertebra is supplied with transverse processes or projections articulating with the ribs, as well as others called oblique, which serve to connect the vertebræ with one another. The most prominent, however, and those which are most essential, as being most visible to the artist, are the spinous processes, having various directions according to their various amounts or directions of leverage in different vertebræ, and it will be well to note carefully the place of the seventh of the neck, called from its greater projection, Vertebra prominens. The fifth also of those of the loins is worthy of notice, as most easily distinguishable.

The os sacrum, forming the base of the vertebral column, is—in an advanced stage of life—but one bone, composed of five parts or vertebræ which have grown together. The whole column owes its flexibility to the discs of cartilage placed between each bone, and which are so elastic as to allow the column to move in all directions without injury to the spinal marrow which runs nearly through its whole length. The greatest

amount of movement takes place in those of the loins and neck. The bearing of the figure—more or less upright—is dependent on the curvature of the spinal column.

To this column—against small smooth surfaces on the sides of the vertebræ, are attached the ribs; twelve on each side; partly bony, partly cartilaginous. The upper seven are called true ribs, the lower five false ribs, as not being joined—like the upper seven—to the sternum or breast bone. Their direction and arched shape downwards, together with their increasing inclination, will be best seen by the figure of the skeleton given at the head of this chapter; and though the mass or basket of the ribs presents a form so opposite to that of the living figure when enveloped in its fleshy covering, it should nevertheless be well considered as the foundation upon which must be built the true form of the principal part of the trunk.

The sternum, or breast bone, forms at the centre and front of the chest—as the vertebral column does posteriorly—the bond of support for the seven true ribs, to which it is attached by cartilaginous articulations. In early youth, the sternum is composed of several bones; but in the adult it has acquired the solidity of a single bone, though its higher and chief point of original division may in most cases be traced by a change in its angle. The general direction of the sternum is forwards and downwards, its angle varying much according to

climate or race, or according to the habits or occupations of individuals. The standard average angle for the sternum has been fixed at from twenty to twenty-five degrees. In the female the angle is greater than in the man; and so, in proportion, is the direction of that portion of the vertebral column constituting the neck, more upright in a woman than in a man.

To the upper end of the sternum are attached the pair of claviculæ or collar bones, slightly curved outwards at first and then inwards; they are usually more prominent in a man than in a woman, in whom we find them thinner and straighter. At their junction with the sternum they leave the small hollow between them,—usually termed the pit of the neck,—which forms so useful a point for the adjustment of a true balance in the figure. The outward end of the clavicle is connected with the acromion and coracoid processes of the scapula, as will be further explained when we treat of the shoulder and arm.

The pelvis comprehends the mass of large and strong bones forming the great cavity which occupies the middle of the human structure. Of these we may chiefly consider the os ilium which forms on each side the great projection of the hip. Spread out in a basin-like form, it presents a capacious curved wall of bone, projecting in a strong crest forward and downward; and, extending around the form posteriorly, it is surmounted

by a powerful rounded edge or spine for the attachment of large and strong muscles. The figure of the skeleton will sufficiently describe the forms and positions of the other bones of this region. On the whole, the pelvis is larger and more capacious in the female than in the male.

The arm,—which together with the wrist and hand is designated, by anatomists, the superior extremity,—is appended to the clavicle and scapula or blade bone, to which it is attached by strong ligaments. The bone of the upper arm, called the humerus or os brachii, is a long bone, round in part and somewhat twisted, enlarging at top into certain tuberosities and a rounded head, which, enveloped by the usual cartilage, rests against the glenoid cavity of the blade bone, fittingly hollowed out, and lined also with cartilage, to receive it. The lower end of the humerus becomes enlarged transversely and by a peculiar joint of beautiful mechanism is fitted to articulate with the two bones of the fore arm, called the radius and the ulna, in such a way as that the one—the radius—can be made to twist over the other in the act of turning the hand from back to front, or *vice versâ*. This double action is called pronation and supination.

To these are attached the numerous small bones of the carpus, or wrist, followed by those of the metacarpus—the space occupied by the back and the palm of the hand;—to which succeed the bones of the fingers.

The inferior extremity—so called from its relative position—is comprised in a similar number and arrangement of bones. The longer, called the femur, or thigh bone, like the superior bone of the arm, is in part round and twisted on its axis. Like the humerus too, it is furnished with a globular head, which fitting into a glenoid cavity forms a powerful ball and socket joint. It has further similarities to the before-named bone of the arm, in the tuberosities about its head and neck. The chief of these, called the trochanter major is of great importance in its position, as regards general form, as well as in the fact that it gives attachment to several powerful muscles.

At the lower end, the femur, like the humerus, widens into two projections or condyles, forming the hinge of attachment to the main bone of the leg, called the Tibia; and as the bones of the carpus and metacarpus intervene between the fore arm and the fingers, so the bones of the tarsus and metatarsus, at the ankle and instep, are the media of junction between the bones of the leg and the toes.

The forms and uses of these several bones of the extremities, with others which make part of their structure, will be explained at large in their proper places, and the differences existing in the male and female specimens pointed out. Suffice it here then to remark, that the same just proportion and balance of the figure is to be attended

to in drawing the skeleton as in the living man, for all the different directions of limb and joint are adjusted in conformity to the intended erect and duly poised posture of man in his state of natural dignity.

PLATE II.

THE HEAD AND NECK.

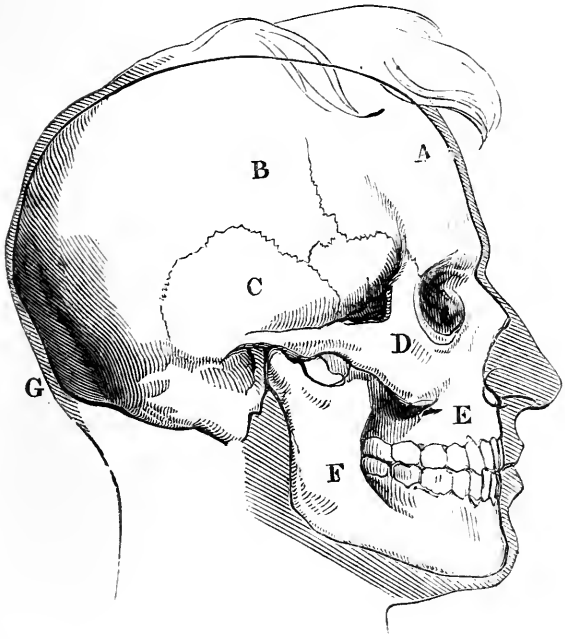
The head is divided by anatomists into the cranium and the face; but it will be perhaps more convenient to consider it here under one term—the head; the face being so intimately connected with the forehead, which, indeed, we shall consider as forming part of it.

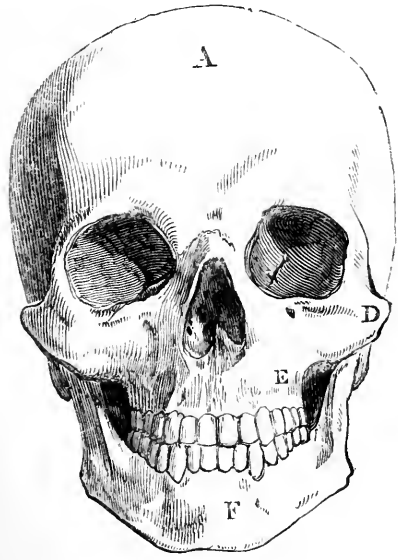
The skull, in its upper part, gives the complete form of that portion of the head; and if we take the cheek bone, together with the lower jaw, we shall have a tolerably just notion of it as a whole, save that the ears and lower portion of the nose will be wanting.

Of the skull—we take the European as the standard—two plates are here given, a front and a profile view, figured in reference to the names of the several bones which are, for the most part, separated by irregularly toothed or zigzag lines called sutures.

A. Frontal bone—*os frontis*.
B. Parietal bone—*os parietale*.
C. Temporal bone—*os temporum*.

PLATE II.





C

D. Malar, or cheek bone—*os malæ.*
E. Upper jaw bone—*maxilla superior.*
F. Lower jaw—*maxilla inferior.*
G. Occipital bone—*os occipitis.*

The ethnoid and sphenoid bones being deeply seated, it is not necessary to give them.

In the forehead we find great variety, not only in different races, but in individuals of the same race. The length of the nose, however, in Europeans, has been given as the acknowledged standard of its height to the limits of the hairy scalp.

The general spheroid form of the cranium is so little changed by its thin muscular and membranous covering, that it may be taken as the true form of that portion of the head. Not so, however, of the face; for of all the muscles of the human structure, those perhaps of the face are the least satisfactory to the artist. So united are they together in their fasciculi, as to form but, as it were, a perplexing network of muscular fibre over the face. Adhering as they do to the bones, the aponeuroses, and the skin, their action is counter, generally speaking, to their forms, causing wrinkles or markings in an opposite direction to their fibres.

PLATE III.

It is nevertheless necessary that these muscles be studied, as a no less important matter than the expression

of the various passions is dependent on them. They will be given, therefore, in as simple a form as possible,

PLATE III.

divested in a great measure of their complexities, and kept as separate from each other as circumstances will allow.

Before giving the names and uses of the muscles of the face, it may be as well to notice the many marked *bony* prominences which give so much character to the human countenance.

The prominent eminence of the occiput, at the lower part of the head—so much larger in some than in others—is particularly remarkable in bald persons; the mamillary processes of the temporal bones behind the ears giving attachment and powerful leverage to the pair of strong muscles belonging to the neck; the frontal arched protuberances above the eyes, which, from their variety and form of projection, give so marked a character to individual foreheads, as also the curved temporal line at each side above the outer ends of the eyebrows; the cheek bone more or less raised, and the coronoid process of the lower jaw bone at its greatest angle—all expressing more or less of mental or physical characteristics.

PLATE IV.

Of the muscles of the face, the following will suffice as most important and most easily understood. Their situation being fully described, it will be unnecessary to attach numerals of reference to them on the plates.

The frontal muscle, *musculus frontalis*, originating at the inner half of the upper ridge of the orbit of the eye, runs upwards in an oblique direction, and becoming

tendinous above the middle of the *os frontis,* unites into the *galea aponeurotica capitis,* which, covering the whole skull, connects all its muscles. This muscle wrinkles the

PLATE IV.

forehead by its action; and drawing up the inner angle of the eye, together with the eyebrows, gives to the face an expression of pain.

The temporal muscle, *musculus temporalis,* arises from the parietal and frontal bones, and, passing under the zygomatic arch, is inserted by a strong tendon into the coracoid process of the lower jaw, which it raises and compresses against the other in clenching the teeth. It is thus an auxiliary to

The *masseter,* which takes its name from its use, chewing or masticating; and itarises in the upper jaw and lower fore-part of the cheek bone. It is a mass of muscular fibres having place at the lower and inner part of the projecting cheek bone, which it descends along the outer side of the lower jaw and is attached to it all the way from the coronoid process to nearly the corner of the mouth. Its use has already been shewn in conjunction with the temporal muscle. With the assistance of the temporal muscle the masseter acts with amazing power, and then, as may be observed, it loses its flattened surface and becomes swollen. The two muscles, in fact, act simultaneously, becoming swollen or contracted at the same moment, at which time also the temporal artery becomes very visible. This happens in violent pain or passion, or during any great effort of the mind or body.

The orbicular muscle of the eyelids, *musculus orbicularis palpebrarum,* is a collection of fleshy fibres encircling the eyes, which it closes and draws together. It is attached to the bony margin all round the orbit of the eye, in the

angle of which it has its origin, and—having completed the circle—its insertion.

The elevator muscle of the nostrils and upper lip, *levator alæ nasi labiique superioris*, originates in a double tendon at the nasal process of the upper jaw, and terminates by spreading its fibres into the wings of the nose and the upper lip, both of which it widens and draws up. It serves materially, but also in conjunction with other muscles, to produce the marked line, or furrow, between the cheek and nostrils.

The compressor muscle of the nose, *compressor nariun*, originating at the root of the nostrils, is first united with the last-mentioned muscle, but soon becoming membranous, covers the whole ridge of the nose and terminates in the forehead.

Its use is to compress the orifices of the nostrils, in the act of smelling. It has the power also of wrinkling the skin of the nose.

The elevator muscle of the upper lip, *levator labii superioris*, commencing below the orbit of the eye, runs obliquely down to the upper lip, which it draws upward and outward. It thus produces the swelling of the cheek in laughter and other passions, in concert with another muscle called the *levator anguli oris*.

The *zygomaticus minor*, acting in concert with the last muscle, has its place by its side, descending in a parallel direction from the cheek bone.

Of the several muscles which affect the action of the mouth, those which have been already noticed have for the most part the pulling of that feature upwards. Those which have the opposite power are, first, the depressor of the corners of the mouth, *depressor anguli oris,* which has its origin at the bottom of the lower jaw, where it sets out broad, but becoming narrower upwards, has received also the name of *musculus pyramidalis.* Running round the angles of the upper lip, it has the effect of drawing the corners of the mouth downward, as its name imports.

The closing of the mouth is brought about by the muscle called *orbicularis oris;* but which, though its use—the shutting of the mouth by drawing both lips together—is important, is scarcely to be considered a distinct muscle, so intimately are its fibres blended with, and indeed a part of, other muscles in its vicinity. Its effects, however, are peculiar in the several movements effected by its varied action, as in constrained passion or deep meditation, when the lips are compressed either against each other or against the teeth; as also in antagonism to some of the other muscles, in the suppression of laughter.

The *buccinator,* or trumpeter, tells its use in its name, the contraction of the lips, as in blowing a trumpet or wind instrument.

Before dismissing the muscles of the face, it may be

useful to observe generally of them, that whilst in the expression of pleasurable feelings, they may be said to dilate or spread, they will be observed to contract or concentrate towards the middle of the face, in violent or powerful emotions.

THE MUSCLES OF THE NECK

Are, as will be seen, connected for the most part with those of the head and face, with which they are therefore given in the plate.

The situation of the windpipe, *aspera arteria*, is too well known to need being pointed out.

It may be observed here, that the two principal movements of the head—the forward, or bowing movement, and the rotatory movement—are chiefly dependent on two separate bones of the neck. The first, or bowing movement, is that which takes place principally at the articulation of the skull with the first vertebra, called from its bearing the globe of the head, *atlas*. The second, or rotatory movement, takes place at the articulation of the atlas and second vertebra, called the *dentator*, from a tooth-like process, which being inserted into the *foramen*, or hollow of the *atlas*, forms a kind of pivot on which it turns. The movement of the head towards either shoulder is limited to a quarter of a circle in each direction.

The other movements, whether lateral or oblique, are performed by the five other vertebræ, in conjunction with the two already noticed.

The neck is formed of the following muscles, enclosing the *cervical vertebræ,* and acting upon their several joints in many motions. They are for the most part in pairs.

The *sterno-cleido mastoideus* is the powerful muscle so prominently conspicuous from its position and volume. Its front edge is rounded and prominent, while its hinder portion is somewhat flattened or hollowed. Its attachments are to the inner portion of the clavicle and to the upper front part of the *sternum,* whence rising obliquely towards the occipital and temporal bones, somewhat twisted in its fibres, it is inserted into the *mastoid process* behind the ear.

It assists in almost all the actions of the neck. In pulling the head towards the side, a wrinkling of the skin on that side takes place, while a consequent tension of the corresponding muscle occurs, on the opposite side, with a strong development of the tendinous portion at its junction with the *sternum.* In this action the prominence caused by the *thyroid cartilage of the larynx,* commonly called Adam's apple, becomes very evident.

Reference in respect to this action may be made to the magnificent throat of the Apollo Belvidere where

the flatness or rather concavity produced by the space between the lower end of this muscle and the *trapezius* is so broadly and finely treated, and where, too, the wrinkling of the skin in front or towards the other side is expressed with the delicacy always found in fine works of antique Greek sculpture.

In old age, and in thin persons, this muscle becomes so strongly marked as to be unsightly; while in the throat of a beautiful female it is hardly visible, unless the head be turned, or some violent effort shall call it into energetic action.

The *trapezius,* so called from its quadrilateral form—and sometimes *cucullaris,* from its resemblance to a monk's cowl (*cucullus*)—is a broad flat muscle, covering the hinder part of the neck, and running down the back in a point, as women wear neck-handkerchiefs.

Its attachments are,

To the occipital bone;

To the ligament, which binds the spinous processes of the vertebræ of the neck;

To the last of these processes; and

To several of those of the back.

From this extended line of attachment, setting out tendinous, but soon becoming fleshy, its fibres are sent out in a radiated form; obliquely downward from the upper part, obliquely upward from the lower, and laterally from the middle towards the shoulder, where

it fills up the angle formed by the *clavicle* and its *acromion process* with its spine. Eventually it attaches itself to the clavicle as far as its middle, and to the superior angle and greater part of the spine of the scapula.

With such a number of attachments, its actions—as may be supposed—are many; the portions intervening between these attachments becoming swollen in proportion to the energy of its contractions in the several parts. So also the wrinkles or cavities at such attachments are, generally speaking, at right angles with its fibres, as seen on the outward surface of the skin.

The forward edge of the muscle may be traced, from its adhesion at the occipital bone, downward to the collar bone.

In pulling the head downward behind, many folds of the skin are produced; but the projections of the spines of the seventh, and mostly the sixth cervical vertebra, are nevertheless visible.

It is this muscle which forms the beautifully curved line of junction between the neck and the shoulder.

There are several muscles of the throat which lie under those already named, but which it will not be here necessary to describe. They are enwrapped, as well as the *sterno-hyoideus,* by

The *latissimus colli,* which has attachments to the skin of the upper part of the chest below the clavicle, and

is inserted into the lower jaw bone. A portion of it ascends towards the ear.

It is a flat and broad muscle, as its name imports, and serves as a wrapper to those beneath it.

It assists in drawing down the angle of the mouth and part of the cheek, and it has also the power of drawing obliquely downward the skin of the neck.

THE SHOULDER JOINT.

One of the most important, and certainly not least difficult, portions of the body, is the shoulder joint, requiring attentive study and keen observation, in respect to its manifold movements.

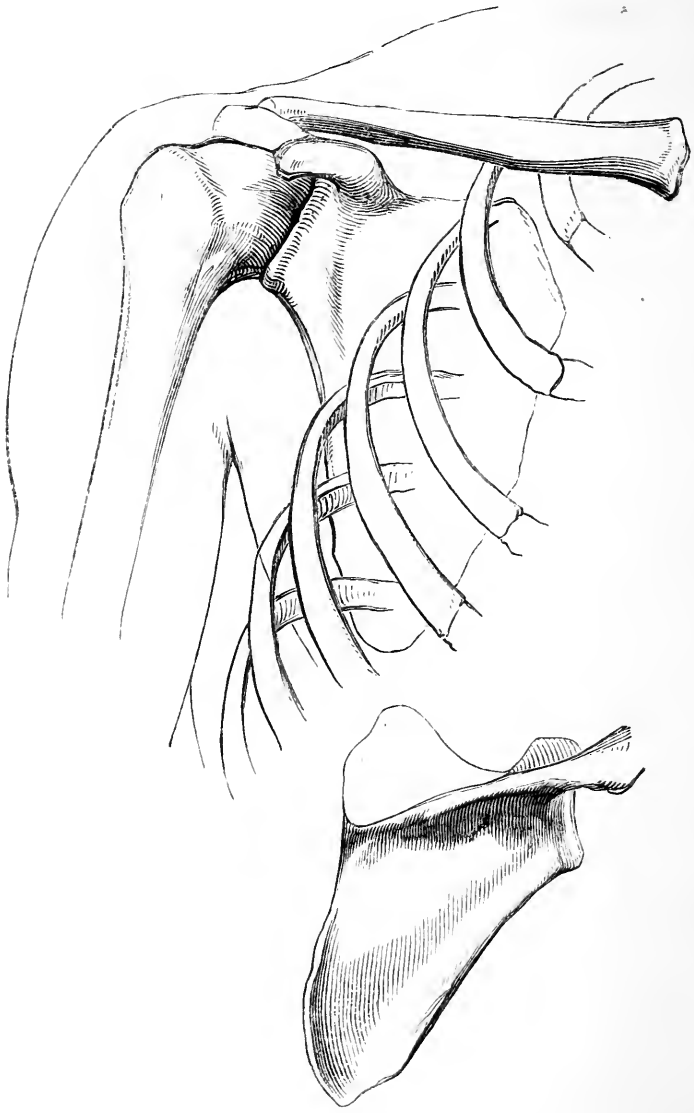
It has been thought necessary to give several plates of the shoulder, as seen in various directions and positions.

The first plate represents the *scapula*, or blade bone, as seen in front, through the ribs, with its *acromion* and *coracoid processes*, and its *glenoid cavity*, against which is placed the head of the *humerus*, or upper arm bone.

PLATE V.

The *clavicle*, or collar bone, is also given in its position with reference to the other bones, as seen when the arm is hanging down. The *clavicle* is attached to the *acromion*, and *coracoid processes* by strong ligaments, forming an

PLATE V.



THE SCAPULA, WITH ITS SPINE AS SEEN AT THE BACK.

arch under which the humerus is suspended; and the whole is enwrapped, as it were, by the several muscles which hold all together.

The *scapula* is free to move or slide over the posterior surface of the ribs; and the *clavicle,* by its attachments on the shoulder, is made to follow its motions upward, downward, and forward.

The socket joint of the *humerus* at its head, gives it the power of moving in almost every direction, independently of, but almost always in conjunction with, the movements of the other bones just named. Thus when the arm is raised, the *scapula* rises with it, changing its angle. The outer end of the clavicle also rises, and thus also changes its angle, the inner or sternum end being its fulcrum.

PLATE VI.

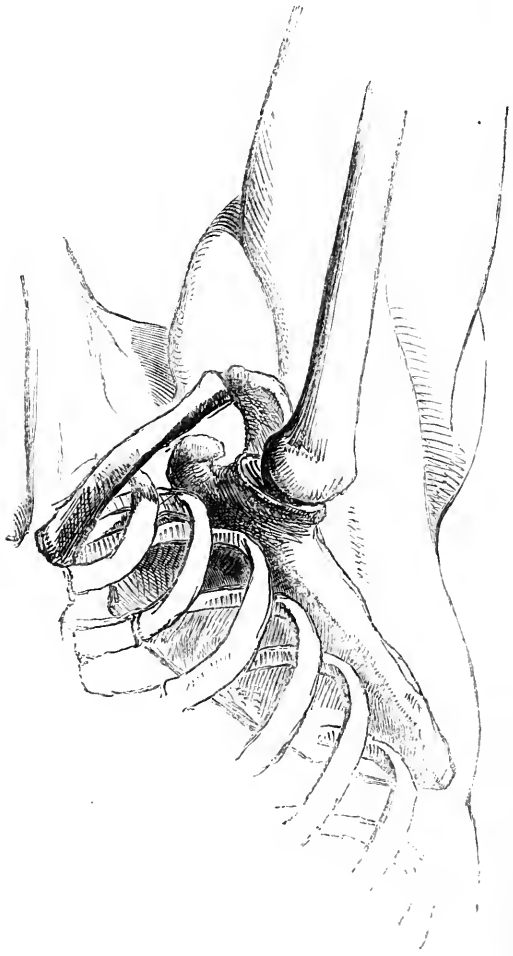
Reference may be made to this action in the raised arm of the Laocoon, and in that also of the Fighting Gladiator.

When the arm is thrust forward, as in pushing, or pulling, or striking, the *scapula* is made to slide partially round the side of the ribs, and the clavicle makes an angle forward more or less according to the energy of the action.

The statue of the Supplicating Youth may be instanced as an example, where, as both arms are held forward, the space between the *scapulæ* as seen behind is much augmented.

In reference to the two actions of pulling and pushing, it must be borne in mind, that while in the first the bones

PLATE VI.



at their junctions are somewhat separated, giving increased length to the arm, they are in the second thrust close together, and the arm becomes proportionably shorter. This of course will be the case but in a slight degree. The muscles will be observed also to act and change correspondingly.

When the arm is thrown back, as in the Fighting Gladiator, or the Discobolon at the British Museum, then the *scapula* slides back over the ribs. Were both arms tied or placed together behind, the two blade bones would approach each other so as nearly to touch.

The Theseus of the Elgin collection is a beautiful illustration of the action of the *scapula*, where, in addition to the backward motion, the act of leaning on the elbow forces the shoulder upward.

PLATE VII.

The varied angles of the *scapula* and *clavicle* in their several motions, cannot be too well studied; nor can too much attention be paid to the place of the bony knob of the *acromion* on the top of the shoulder, but neither should it be too strongly marked. Almost all the antique statues may be referred to as examples, for in them we find no vulgar exaggeration of these bony prominences; yet are they marked, and always in their proper places.

The muscles, portions of which, as has been said, enwrap the bones which form the shoulder joint, are, first—

The *deltoid;* so named from its triangular form, like the delta Δ or D of the Greek alphabet. It is composed of seven, but may be simplified into three, principal lobes or masses of fibres.

PLATE VII.

Its attachments are—

In front, to about one-third from the shoulder end of the *clavicle.*

In the middle, to the *acromion process.*

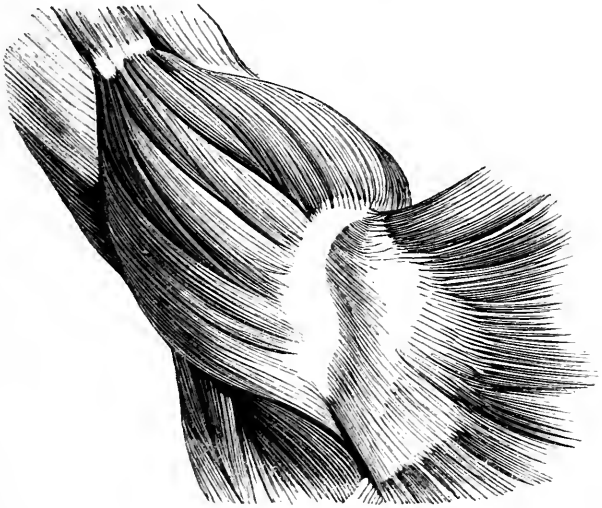
At the back, to the lower edge of the *spine of the scapula.*

The whole of the three portions combine downwards into a point, and are inserted into the *humerus* or bone of the upper arm at about its middle.

PLATE VIII.

The *deltoid* is a powerful muscle, finely rounded about the head of the arm bone. By its threefold power, it

PLATE VIII.



raises the arm laterally, or forward, or backward, according as either portion of its fabric is more or less called into energy; the active portion being always the most swollen, while its antagonist portion becomes proportionably flattened or extended.

When in the act of lifting the arm up, it swells around

the *acromion* process which then, though still marked, becomes a hollow in place of a projection.

The circumstance of its hindmost lobe being attached to the *spine of the scapula*, and thus lower in position than in front, causes a difference of form as to height, when seen in profile, and a consequent flatness above the scapular spine. This is more evident when the arm is moved backwards, as then the rounded head of the arm bone being pressed forward causes a greater protuberance in front.

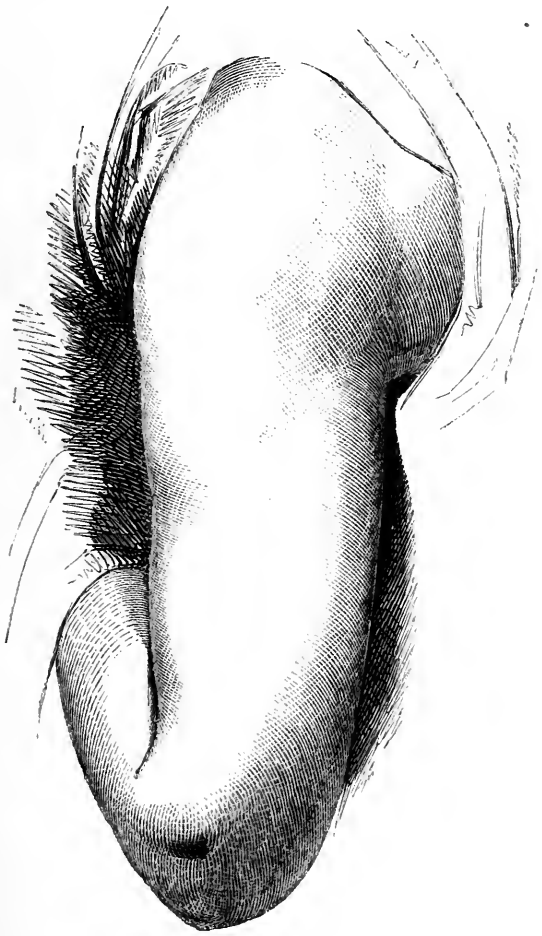
A proof of this is to be seen in the colossal statue called the Farnese Hercules, which, though an exaggeration of muscular development, is—and perhaps by the very fact of such exaggeration—a most useful example in the studies of an artist.

It may here be remarked, that when one arm is raised, the head is naturally thrown over toward the opposite shoulder, unless, as in peculiar cases, the muscles of the neck are made to counteract such motion. In raising the arm too, it must not be forgotten, that, in order to keep up a just balance of the figure, the general line of the body is changed. It is well to observe this general direction, and to mark it in sketching-in the mesial line in front or that of the spinal vertebræ behind.

PLATE IX.

In a woman, we mostly find the *deltoid* with a slight depression in the middle outwards, perhaps in conse-

PLATE IX.



quence of its continuing to be fleshy nearer to its insertion than in a man; or it may be caused by a greater thickness in that part of the *adipose membrane* which covers the muscle. Sometimes too it happens that at the articulation of the outward end of the clavicle a too great elevation of the integument is observed. These delicate differences, however, are best appreciated through careful observation of the antique statues or of the beautiful in nature.

The *pectoral* muscle, forming the breast, has attachments—

To the collar bone,
To the inner half of the sternum, and
To the cartilages of the second, third, fourth and fifth ribs, and to the body of the sixth rib.

Its bundles of fibres produce in a man a broad flat, though slightly rounded, surface, and uniting together outwardly, form a triangle by insertion into the *humerus* immediately underneath the *deltoid*.

Contributing to the forward actions of the shoulder joint, it pulls it towards the sternum either directly, or obliquely upward, or obliquely downward, according as the several portions of its fibres are made to contract. There is always to be noticed, more or less, a slight depression or fold in this muscle as it approaches the insertion, causing a secondary rise which is more observable and still more beautiful in the female form. There are too, when the muscle is stretched by the extended uplifting of the

arm, certain little inequalities of fibre and aponeurotic portions observable in and through the skin, or *adipose membrane,* which covers it. A deep hollow occurs under the arm when stretched up laterally or forwards, but it becomes less when the arm is raised still higher. In a woman, the hollow thus formed is not so deep.

PLATE X.

THE TRUNK.

The two sides exactly answering to one another externally, it will be sufficient to describe the set of muscles composing one half of the trunk.

The *mesial line,* as it is called, divides the two halves, beginning at the hollow between the collar bones, proceeding all down the surface of the *sternum,* and through the whole of the trunk.

The pectoral muscles having been already described, it is merely necessary to say, that between them (and caused by their several prominences on either hand) is the *sternal groove,* being the upper portion of the *mesial* line. At the bottom of the *sternum* is a lozenge-shaped hollow, caused by the projecting cartilage of the seventh rib on each side.

In the antique statues generally, we find a broadly arched prominence, answering in some measure to the form of the ribs, and surrounding the pit of the stomach.

It appears, indeed, to have been a convention of the ancient sculptors to exaggerate and widen this arched form. In some men, however, it is to be found much more nearly approaching the antique form than in the generality of persons, and it would be a bold measure, requiring the nicest discrimination, to depart from an acknowledged standard, such as the Greek antique.

Immediately on each side of the sternal groove just named, are projections of the ribs, or their *sterno-costal* articulations, the upper two being generally the most prominent. In thin persons, these are, of course, more salient; and, as in such case the body of the *pectoral* is flatter and thinner, so in proportion are these prominences more evident and more extensive.

The nipple is generally on a line with the fifth rib, or somewhat above it; but this is dependent on the action of the muscle.

From the bottom of the *sternum* the *mesial* line continues down, as before stated, throughout the whole length of the trunk, separating the two bodies of muscle which form the abdomen longitudinally.

The *rectus,* or straight muscle alluded to, is attached above, to the *sternum,* and to the cartilages of the fifth, sixth, and seventh ribs; and, running directly down, is inserted into the os pubis at the lower extremity of the body.

The outline of this muscle, as seen in profile, varies so much in different individuals as well as in different

PLATE X.

actions, that it will be best studied from the antique statues, where it is given in its greatest purity of form. In its action of pulling the upper part of the body downwards and forwards, it produces many folds in the outer skin which covers it, and this is further carried out by certain transverse bands, uniting at their outer ends with the tendinous expansion of its neighbour muscle. These bands are tendinous on the surface, but not usually through the whole thickness of the muscle. They are generally three in number, and serve to divide the fore part of the body very symmetrically. As they are not quite alike, either in number or position, in all persons, the antique statues may, as before mentioned, be adduced as examples of the best form of this muscle.

The *obliquus descendens*, the great obliquely-descending muscle, adjoins the last named, and gives, at and above the hip or crest of the *ilium*, that beautiful curved prominence, so elegantly defined in the antique statues. Its chief attachments are to the upper ridge of the *ilium*, and to seven, or sometimes eight, of the lower ribs, in regular, obliquely-disposed serrations.

The fibres constituting this muscle take such various directions, that it would occupy too much space to particularise them here.

The depression or indent at the junction of this muscle with the *ilium* is caused by the sudden fleshiness of its fibres, as compared with the aponeurotic attachment

to the bone itself; thus the projection of bone in the skeleton becomes a groove or furrow in the living man, and the fuller and stronger the muscle the deeper the groove. This rule—which applies generally to the muscles at their attachments to strong projections of bone in fleshy persons—will nevertheless be found to have its exceptions in emaciated forms. Thus too, it may be observed, that although, in a general way, the larger projections of the skeleton are those observable in the living being, it must not be supposed that outlines drawn immediately from point to point, or from one projection of bone to another, will give the drawing of the human form; for in addition to the layers of muscles enwrapping the bones—in some places thinner, in others thicker—we have to take into account the binding and uniting *aponeuroses,* and above them the thick *adipose membrane* or skin—generally so called—which constitutes the outer covering.

The *serratus magnus* is the saw-like muscle seen on the side of the figure. It has tendinous attachments to the outer sides of the ten uppermost ribs; its first digitation to the first two; the other eight to the eight remaining ribs in succession, forming a course of zigzag serrations on a line obliquely backwards and downwards, interlacing with those of the great *obliquus* muscle. From thence running obliquely upward and backward, it is attached to the *scapula,* which it draws forward and downward.

When, however, the *scapula* is held firmly in position, its power is that of raising or lifting the ribs outward, as in actions where violent respirations are required. When the arm is raised, this muscle is more apparent, as exemplified in the Fighting Gladiator, and also in the group known as Hæmon and Antigone, as well as in many others.

PLATE XI.

The *latissimus dorsi*, large broad muscle of the back, wraps broadly over the portion below the blade bones. Its attachments are to the vertebræ from about the sixth of the back downwards, as well as to the lowermost four ribs, from whence it runs upwards in many fibres to the rough protuberance under the head of the *humerus*, where it is inserted by a long, thin, but powerful tendon.

This muscle draws the *scapula* and upper arm downward and backward, retaining the lower angle of the *scapula* in its place, suffering it, however, to play upon the ribs, and showing its form in its various changes of position.

Like the last muscle, and in like manner, it acts upon those ribs to which it is attached, when the raised arm is held firmly in position.

When the body is bent forwards, and this muscle consequently stretched, the ribs make their appearance in projections seen beneath it.

PLATE XI.

Beneath, and enwrapped by this broad muscle, we see the forms of the more fleshy and rounded long muscle of the back, *longissimus dorsi,* attached to the *ilium* and *os sacrum* at its lower extremity, and to the angles of the ribs and the processes of all the vertebræ.

In bending the body backward, this muscle produces many transverse folds; but in various positions of extension there are certain peculiar characteristics of protuberance or rotundity, or of edginess, according to circumstances of action, that can only be understood by reference to nature or fine antique statues.

It may be remarked here, that the greatest flexibility of the trunk is at the loins; and the transverse folding of the skin on the one hand, and its tension on the other, according to the flexion or extension of the body, is therefore most observable in this region.

The comparative width of the shoulders and the hips in the male and female form, has already been pointed out in treating of the skeleton. It is not necessary, therefore, to enlarge on the difference of proportion thus produced.

The difference of form, too, in the pectoral muscle of the female is too obvious to need more than a mention here.

PLATE XII.

THE SUPERIOR EXTREMITY, OR ARM.

The arm, together with the hand, is a most beautiful piece of complicated mechanism, giving to man powers which no other animal is gifted with. There is no part of the exterior surface of the whole body that the hand cannot reach, nor are there any bounds to the variety and usefulness of its motions in combination with those of other parts of the body.

The osseous structure of the arm, independently of the *scapula* and clavicle, consists, like the lower limb, of three bones—one belonging to the upper portion, two to the lower. Those of the wrist and hand are more numerous, as will readily be seen.

It may however be noticed, that it is no uncommon error of the tyro, in drawing the arm, to omit altogether the consideration of the cluster of the carpal bones, as if the hand were immediately attached to the fore arm without the intervention of those forming the wrist.

Great as is the similarity in general arrangement of the upper and lower extremities, there is nevertheless a marked difference in one peculiar action of the fore arm, in which the one bone, the *radius*, is made to roll over and to cross the other. Its joint, therefore, with the bone of the upper arm is constructed suitably to this motion, and differently to that of the knee.

PLATE XII.

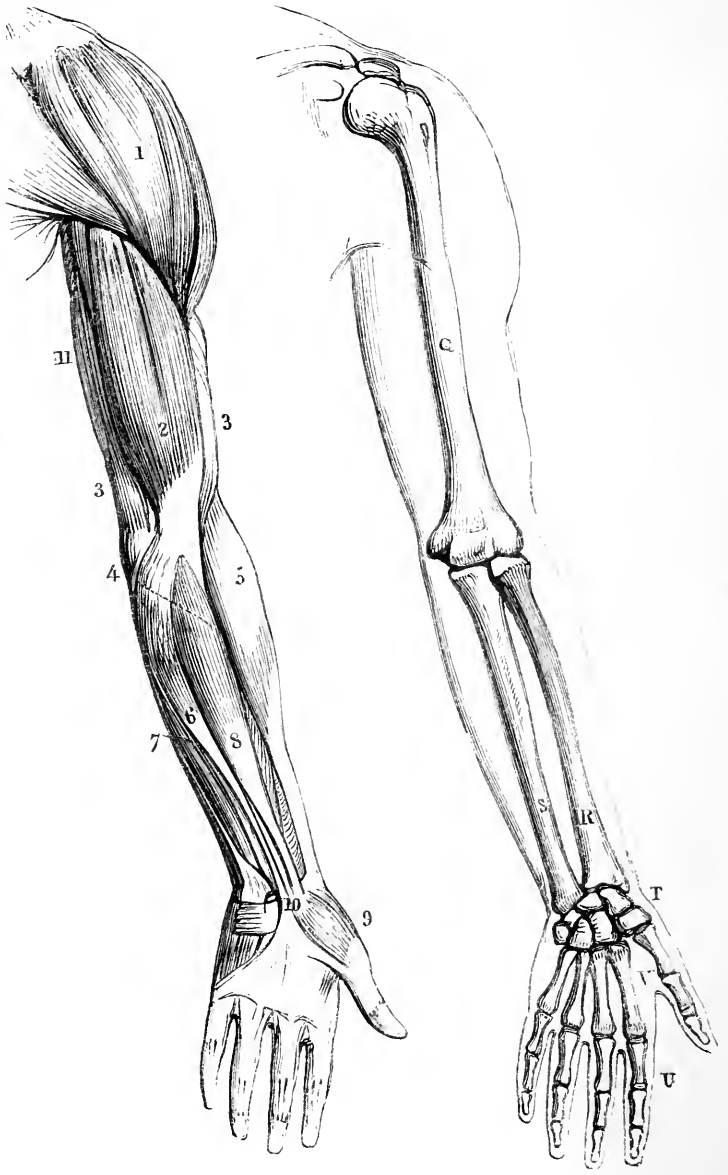


PLATE XIII.

When the bones are thus crossed, the thumb is turned inward and the palm of the hand backward. This act is called *pronation;* the hand being thus prone or ready for action.

When the bones are side by side, the thumb is turned outward, and the palm of the hand is in front. This is called *supination,* in antagonism to the other. The muscles producing these two motions are therefore called, *pronators* and *supinators.* So also it may as well be borne in mind, that muscles, which bring about the flexion or bending of the arm, are designated *flexors,* while those which cause the extension of the limb are called *extensors;* the first being for the most part in front, the others at the back.

It will be observed that the joint of the arm is not at a right angle with the direction of the shafts of the bones, and that in the position referred to, as *supination*, an angle like this ⟨ will be produced by the varied direction of the upper and lower portions of the arm. In *pronation*, however, the general direction of the whole arm is straighter when stretched out; as will be readily observed in nature.

In the setting on of the hand, it may be remarked that the greatest proportion is on the thumb side; thus, if a line were drawn continuous with the arm at the wrist, it would take the direction of the outside of the hand along the edge of the little finger; whereas on the other side a similar line would run with the second finger, leaving the thumb and fore finger beyond, or on the outside of the line. The hand as portrayed by the ancient Egyptians in their painted sculptures, will illustrate this in exaggeration.

PLATE XIV.

The back of the human hand is arched transversely, while the interior is proportionably concave. Of the knuckles, or bony prominences of the *metacarpal* bones at

their junction with the fingers, that of the middle finger it most prominent. In a fleshy female hand, or that of a child, they become hollows, or dimples instead of prominences. To these are directed the fan-like tendons of the extensor muscles seen—particularly in a thin hand—through the integument. That of the thumb is the most distinct; and in addition to it, is also seen, passing round over the radius, the tendon of the extensor of the thumb, between which and the last is thus formed a long triangular hollow. On the other side, the muscle proper to the little finger forms a more fleshy mass.

When the fingers bend inwards, the tendency of each is to incline towards the middle of the palm. The peculiar direction of the joints of the thumb and of each finger, as well as the angle, which the whole make in respect to their junction with the metacarpal bones, must be studied from the living hand to be properly understood.

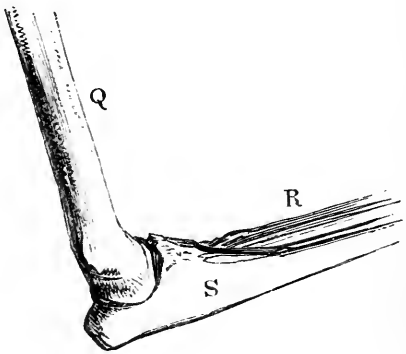
The bony prominences on each side of the wrist are, externally, the head of the *cubit*, or *ulna;* internally, the lower end of the radius, this latter being somewhat lower in position than the other.

At the elbow joint, the *inner* condyle of the *humerus* forms the greatest projection, though even this in a fleshy female arm frequently becomes a dimple, or hollow.

The projection of the *olecranon*, or elbow, itself must

be considered, as it regards proportional length in the the lower arm, which becomes greater when the arm is bent, on account of its continuing as a projection beyond the lower end of the upper arm bone. When the arm is straightened, this point or projection fits into a groove between the condyles of the *humerus,* hollowed out to receive it.

PLATE XV.



It were a vain endeavour to describe by words the infinite variety of action and consequent change of form which occurs in the human arm. Suffice it, therefore, to give in a tabular form the names of the principal muscles, such names being sufficiently expressive of their functions.

The diagrams will point out their several attachments.

PLATE XII.

THE ARM SEEN IN FRONT.

(SUPINE.)

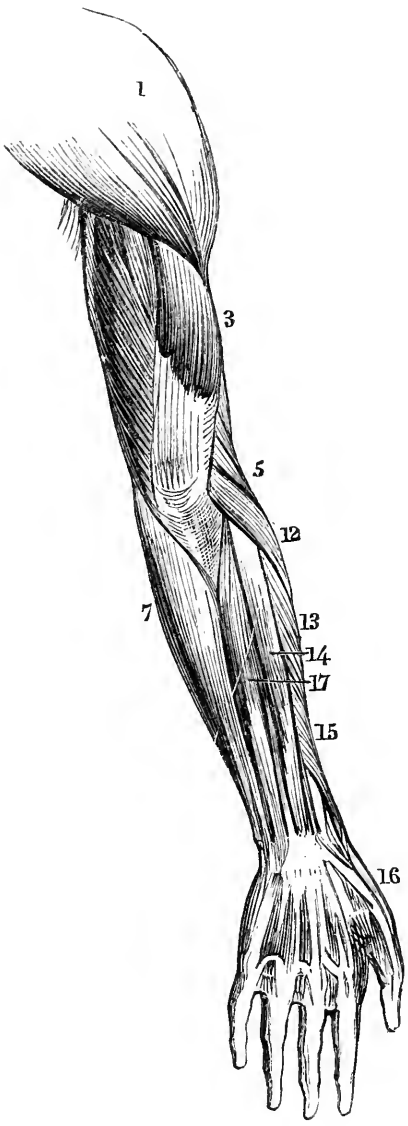
1. Deltoides.
2. Biceps brachii.
3. Triceps extensor cubiti.
4. Pronator radii teres.
5. Supinator radii longus.
6. Palmaris longus.
7. Flexor carpi ulnaris.
8. Flexor carpi radialis.
9. Flexor longus pollicis.
10. Palmaris brevis.

The *deltoid* has already been described as the chief muscular portion of the shoulder. Were the front of this muscle removed, the *biceps* would be seen with its two heads—whence its name; the longer of these heads, or tendons, would be observed attaching itself to the *coracoid process* of the *scapula;* the shorter entering the *bicipital groove* of the *humerus.* The combined mass becoming very fleshy, and then again tendinous, affixes itself to the bicipital tubercle of the *radius,* whence conjointly with the *triceps,* it forms a sinewy membrane descending the fore arm to the wrist.

When strong action is manifest, this muscle contracts very much in its fleshy part, though a flatness is still more or less observable in front.

The *triceps brachii* is seen on either side of the *biceps*

PLATE XVI.



continuing round the back of the *humerus*. Its three heads, to which it owes its name, have induced some to consider it as three distinct muscles, and as such it is seen in the back view of the arm. When acting together, they extend the fore arm.

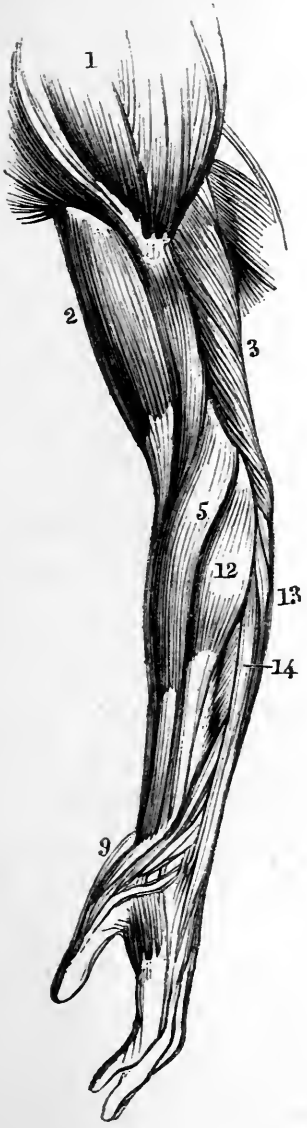
PLATE XVI.

THE ARM SEEN FROM BEHIND.

(SUPINE.)

1. Deltoides.
3. { Anconæus externus / Anconæus longus / Anconæus internus } triceps.
12. Radialis externus longus.
13. Radialis externus brevis.
17. Flexor carpi ulnaris.
14. Extensor digitorum communis.
15. Extensor brevis pollicis manus.
16. Extensor longus pollicis manus.

PLATE XVII.

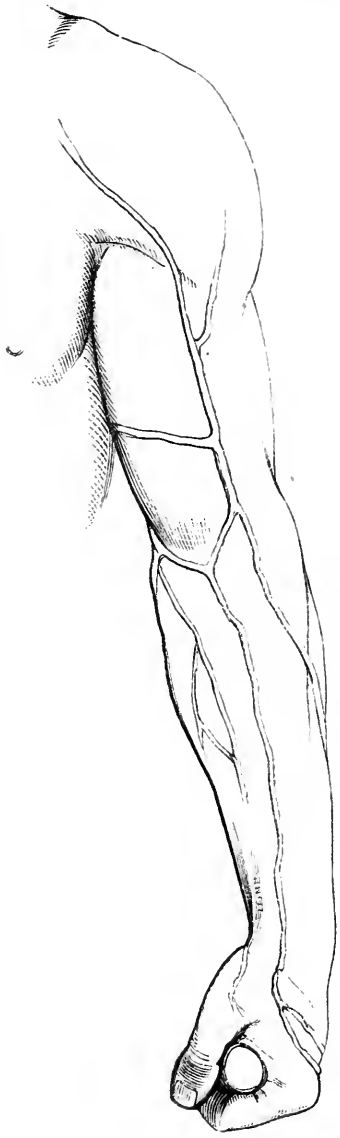


A ligament—purposely omitted in the illustrations—which binds together the various tendons at the wrist is called the *ligamentum carpi annulare.*

THE ARM SEEN AT THE SIDE.

1. Deltoides.
3. Triceps brachii.
5. Supinator radii longus.
12. Radialis externus longus.
13. Radialis externus brevis.

PLATE XVIII.



The positions of the principal veins are given at large. They may be shown or not, as occasion requires, but in all cases are to be introduced with judgment, and sparingly. The antique statues will serve us as sure guides in this particular.

In the female, the bony tuberosities and muscular prominences are less marked. The muscles are less tendinous and more gently rounded in their fleshy masses, less divided by furrowed and angular divisions, which become more evenly filled with soft integuments.

The *biceps* in particular is less abrupt, and the *deltoid* has a peculiarity of form, as best described in the plate at page 37. In other respects, the general form and disposition are the same, unless indeed by the comparative narrowness of the

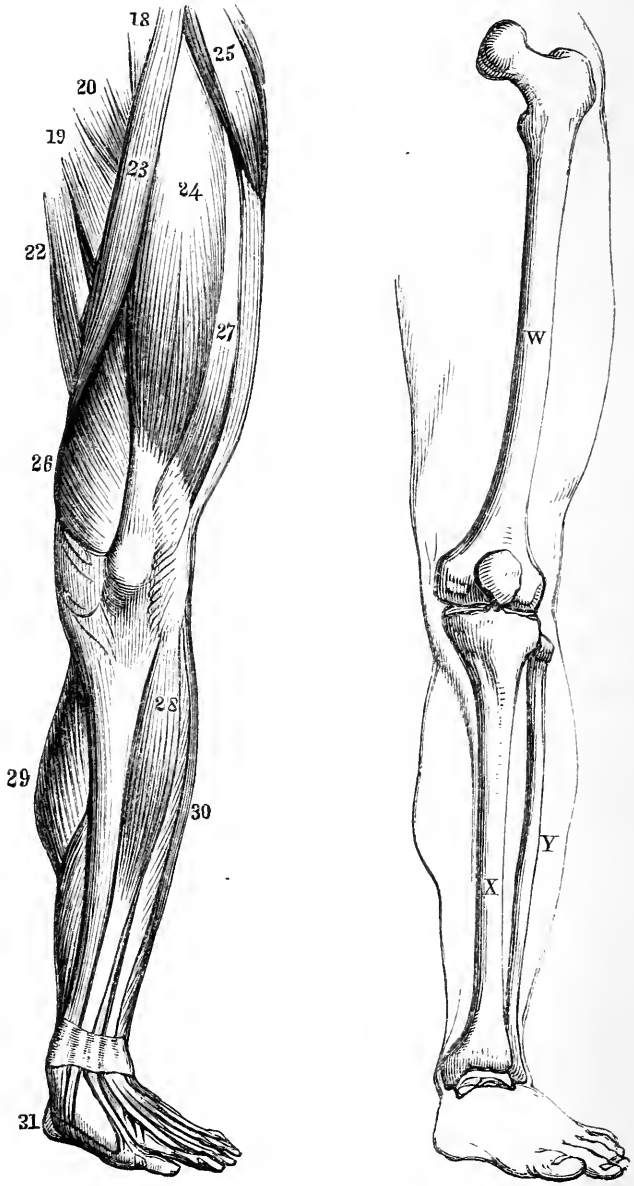
shoulders, and greater expansion of the hips, we find a slight difference in the hanging down of the arm at the side.

PLATE XIX.

THE INFERIOR EXTREMITIES.

The muscles of the lower extremities are for the most part united with each other in their several functions as well as fabric, and the limits of a little work like the present do not admit of so tedious and complicated a description as they might necessarily require. With the following remarks, therefore, the reader is referred to the tables of the muscles of the leg and thigh given in explanation of the plates, where their several forms and positions are made sufficiently evident. It has been thought necessary, however, to pay a little further attention to the knee joint, as a portion of the human form not less beautiful than important, and two views of the muscles as they appear when the knee is bent are given at page 60.

PLATE XIX.



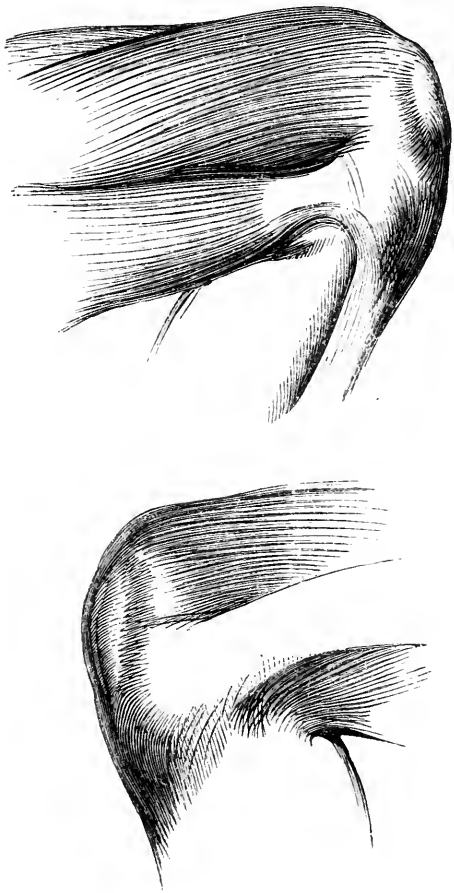
PLATES XX. and XXI.

The marked difference which exists in the knee of the woman as compared with that of the man, is chiefly dependent on the skeleton form. In the female, as the expansion of the hip bones is greater, so the inclination of the *femur* bones towards each other at their lower extremities (in order to produce a just and beautiful equilibrium), produces a necessary difference of angle in the setting on of the bones of the lower leg, and a consequent greater protuberance inwards at the knee. In addition to this, the female knee is more abundantly clothed with *adipose membrane,* and is thus proportionably larger than in the man.

In hardly any action of the leg or arm does it occur that the greatest protuberance of muscle on one side, is answered by a corresponding *opposite* protuberance on the other. The architect, in his works, is regular as to contour; the one side always answering the other for uniformity's sake. The Great Architect of man has constructed with more picturesqueness and certainly not less beauty.

This rule will be found to apply, not only to the leg and arm, but pretty generally to the figure, taken either as a whole or in its several parts.

PLATES XX. and XXI.



When the knee is bent, the *patella* or knee-cap recedes partially into the space formed by the separation of the *femur* and *tibia* bones at the joint.

PLATE XIX.

MUSCLES OF THE INFERIOR EXTREMITIES.

(SEEN IN FRONT.)

18. Iliacus internus.
19. Triceps longus.
20. Pectinalis.
21. Biceps femoris.
22. Gracilis.
23. Sartorius.
24. Rectus femoris.
25. Tensor vaginæ femoris.
26. Vastus internus.
27. Vastus externus.
28. Tibialis anticus.
29. Gasterocnemius.
30. Extensor longus digitorum pedis.
31. Abductor pollicis pedis.

PLATE XXII.

MUSCLES OF THE INFERIOR EXTREMITIES.

(SEEN AT THE SIDE.)

32. Glutæus maximus.
35. Glutæus medius.
21. Biceps femoris.
26. Vastus internus.
27. Vastus externus.
25. Tensor vaginæ femoris.
23. Sartorius.
29. Gasterocnemius.
28. Tibialis anticus.

PLATE XXII.

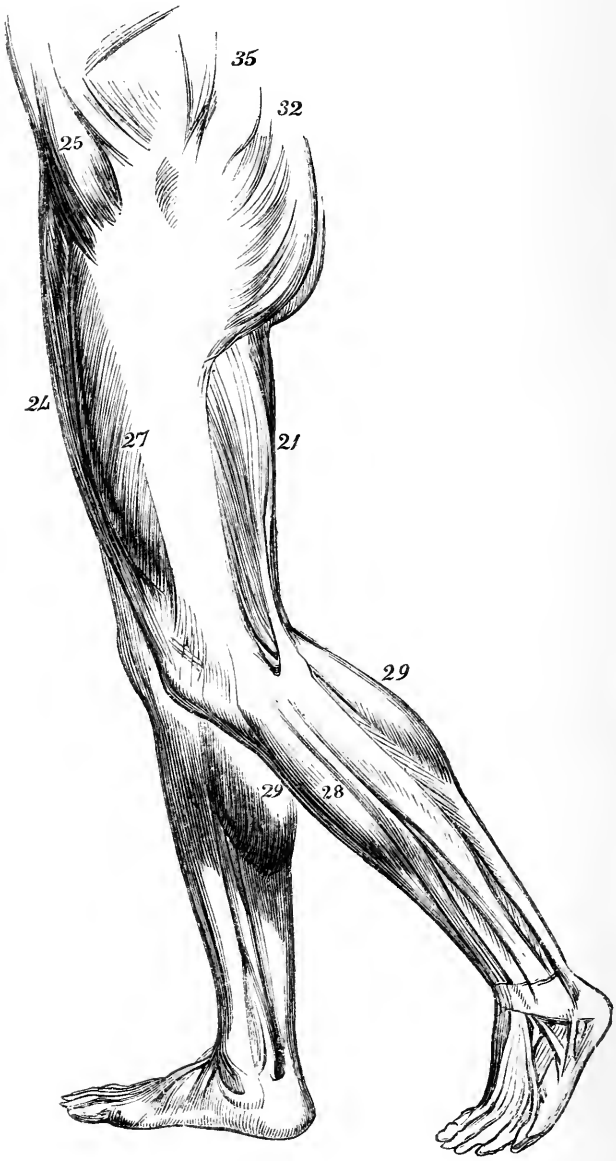
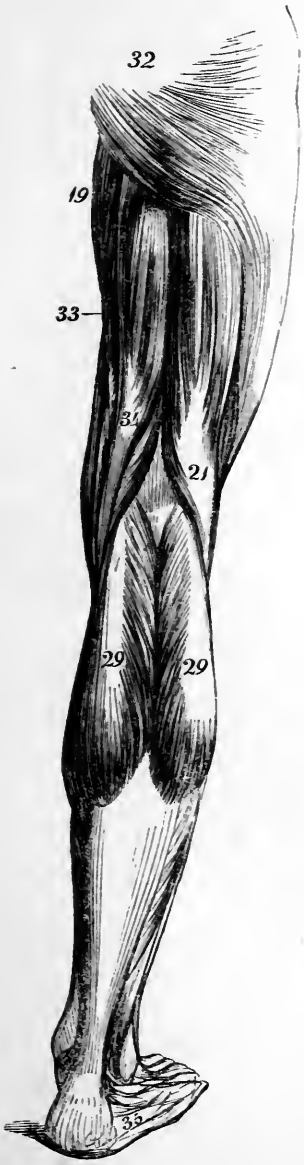


PLATE XXIII.



MUSCLES OF THE INFERIOR EXTREMITIES.

(SEEN AT THE BACK.)

32. Glutæus maximus.
26. Vastus internus.
27. Vastus externus.
21. Biceps femoris.
19. Triceps femoris.
33. Semimembranosus.
34. Semitendinosus.
22. Gracilis.
23. Sartorius.
29. Gasterocnemius.

The *solæus*, or lower portion of the calf of the leg, forms by the strong sinewy portion, called *tendo Achilles*, where it attaches itself to the bone of the heel, a marked protuberance.

In drawing the foot, it may be remarked that the same rule obtains with respect to its setting on to the leg as the hand to the fore arm; that is to say, it is not placed immediately or directly under, but somewhat obliquely with, the *tibia*

bone; so that the inner ankle is made to project more than the outer. Nor must it be forgotten that the *tarsal* cluster of bones have here their place. In fact, it should be observed that throughout the whole skeleton, the bones are so arranged with respect to each other that there shall not exist a right angle at their joints; and thus is avoided the chance of violent concussion in sudden movements, as of jumping, striking, or the like. A sinuous or slightly undulating line is thus maintained throughout the structure, and it is this line which gives the grace and elasticity of appearance so observably beautiful in the human figure.

END.

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WINSOR AND NEWTON'S

MOIST WATER COLOURS.

Extract from Mr. HARDING'S Work, "The Principles and Practice of Art."

"The Art of Painting in Water-Colours has been greatly assisted by improvements in the preparations of the pigments; the greatest advantage, however, has been the introduction of *Moist Colours*, which, I believe, are a French invention, *but greatly improved by* Messrs. Winsor and Newton."

LIST OF COLOURS AND PRICES.

PRICE 1*s.* each.

Antwerp Blue
Bistre
Burnt Sienna
Burnt Roman Ochre
Brown Pink
Blue Black
Burnt Umber
Brown Ochre
Chrome Yellow, 1, 2, and 3
Cologne Earth
Dragon's Blood
Emerald Green
Gamboge
Hooker's Green, No. 1
Hooker's Green, No. 2
Indigo
Indian Red
Italian Pink
Ivory Black
Lamp Black
Light Red
Neutral Tint
Naples Yellow
Olive Green
Prussian Blue
Prussian Green
Payne's Grey
Raw Sienna
Raw Umber
Red Lead
Roman Ochre
Sap Green
Terre Verte
Vandyke Brown
Venetian Red
Vermillion
Yellow Ochre
Yellow Lake

[Continued.

MOIST WATER COLOURS, continued.

1*s.* 6*d.* each.

Sepia	Mars Brown
Warm Sepia	Mars Yellow
Roman Sepia	Crimson Lake
Brown Madder	Scarlet Lake
Constant White	Purple Lake
Chinese White	Scarlet Vermillion.
Indian Yellow	

2*s.*

Cobalt Blue.

3*s.* each.

Green Oxide of Chromium	Pink Madder
Lemon Yellow	Rose Madder
French Blue	Intense Blue

5*s.* each.

Mars Orange	Ultramarine Ash
Pure Scarlet	Carmine
Burnt Carmine	Gallstone
Smalt	Cadmium Yellow
Purple Madder	Orange Vermillion

21*s.*

Genuine Ultramarine.

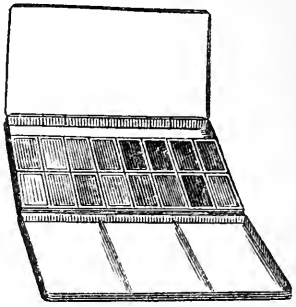
MOIST WATER COLOURS IN PATENT COLLAPSIBLE TUBES.

A new preparation of Moist Water Colours, particularly adapted for large works, as any quantity of colour can be immediately obtained, thus affording additional facilities for rapidity and increased power; these colours present a range of pigments, which, in brilliancy and similarity of manipulation, much resemble Oil Colours.

The Prices are the same as the Moist Colours in Pans.

JAPANNED TIN SKETCHING BOXES.

Filled with Moist Colours.



(The following arrangements of colours are selected from those most in use by the first Water Colour Artists.)

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containing Sepia, French Blue, and Chinese White.

Price 9*s.*

6 **Cake Box, No. 1.**—(Assorted for Landscape.)

containing Gamboge, Raw Sienna, Venetian Red, Crimson Lake, Prussian Blue, and Vandyke Brown.

Price 10*s.*

Ditto, No. 2.—(Landscape and Figures.)

containing Vandyke Brown, Indigo, Cobalt, Crimson Lake, Light Red, and Indian Yellow.

Price 11*s.* 6*d.*

8 **Cake Box, No. 1.**—(Landscape.)

containing Gamboge, Yellow Ochre, Burnt Sienna, Light Red, Crimson Lake, Cobalt, Indigo, and Vandyke Brown.

Price 13*s.* 6*d.*

8 Cake Box, No. 2.—(Landscape and Figures.)

containing Yellow Ochre, Light Red, Scarlet Vermillion, Rose Madder, Cobalt, Madder Brown, Vandyke Brown, and Prussian Blue.

Price 16*s.*

10 Cake Box, No. 1.—(Landscape.)

containing Gamboge, Yellow Ochre, Burnt Sienna, Venetian Red, Crimson Lake, Vandyke Brown, Olive Green, Neutral Tint, Cobalt, and Indigo.

Price 16*s.*

Ditto, No. 2.—(Landscape and Figures.)

containing Yellow Ochre, Indian Yellow, Burnt Sienna, Light Red, Vermillion, Rose Madder, Cobalt, Prussian Blue, Vandyke Brown, and Olive Green.

Price 18*s.*

12 Cake Box, No. 1.—(Landscape.)

containing Brown Pink, Vandyke Brown, Indigo, Neutral Tint, Cobalt, Crimson Lake, Indian Red, Vermillion, Burnt Sienna, Light Red, Yellow Ochre, and Gamboge.

Price 18*s.* 6*d.*

Ditto, No. 2.—(Landscape, Figures, &c.)

containing Gamboge, Indian Yellow, Raw Sienna, Burnt Sienna, Light Red, Scarlet Vermillion, Rose Madder, Purple Lake, Vandyke Brown, Brown Pink, Indigo, and French Blue.

Price £1. 2*s.* 6*d.*

14 Cake Box, No. 1.—(Landscape.)

containing Cobalt, Indigo, Neutral Tint, Emerald Green, Brown Pink, Vandyke Brown, Madder Brown, Crimson Lake, Indian Red, Light Red, Burnt Sienna, Indian Yellow, Yellow Ochre, and Gamboge.

Price £1. 2*s*.

Ditto, No. 2.—(Landscape, Figures, &c.)

containing Indigo, French Blue, Neutral Tint, Emerald Green, Olive Green, Vandyke Brown, Madder Brown, Purple Lake, Rose Madder, Scarlet Vermillion, Light Red, Indian Yellow, Yellow Ochre, and Gamboge.

Price £1. 5*s*. 6*d*.

16 Cake Box, No. 1.—(Landscape, Figures, &c.)

containing Lemon Yellow, Gamboge, Indian Yellow, Yellow Ochre, Burnt Sienna, Light Red, Vermillion, Rose Madder, Purple Lake, Madder Brown, Vandyke Brown, Olive Green, Emerald Green, Payne's Grey, Indigo, and Cobalt.

Price £1. 8*s*. 6*d*.

Ditto, No. 2.—(Flowers, Landscape, &c.)

containing Gamboge, Indian Yellow, Gallstone, Chrome No. 1, Vermillion, Indian Red, Pure Scarlet, Rose Madder, Carmine, Burnt Carmine, Vandyke Brown, Ivory Black, Olive Green, Emerald Green, Indigo, and French Blue.

Price £2. 2*s*. 6*d*.

18 Cake Box.—(Landscape, Figures, Flowers, &c.)

containing Lemon Yellow, Indian Yellow, Gamboge, Yellow Ochre, Burnt Sienna, Light Red, Vermillion, Rose Madder, Purple Lake, Brown Madder, Olive Green, Vandyke Brown, Emerald Green, Payne's Grey, Indigo, Cobalt, Raw Sienna, and French Blue.

Price £1. 13*s.* 6*d.*

20 Cake Box.—(Complete for Landscape, Flowers, Figures, &c.)

containing Lemon Yellow, Gamboge, Indian Yellow, Yellow Ochre, Chrome No. 3, Vermillion, Light Red, Indian Red, Rose Madder, Carmine, Purple Madder, Vandyke Brown, Sepia, Brown Pink, Sap Green, Emerald Green, Indigo, French Blue, Smalt, and Cobalt.

Price £2. 7*s.* 6*d.*

N.B. For any colour in the foregoing lists another may be substituted, and if the colour selected is higher or lower in price, the difference added or deducted.

JAPANNED MOIST COLOUR BOXES.

(WITH PALETTE FLAPS.)

To contain 3, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, or 24 cakes.

Boxes for Moist Colours made to order, to hold any number of cakes, and on any plan, to suit the artist's convenience.

Japanned Water Bottles, with double cups, for holding water in Sketching from Nature, the cups being attached to the Moist Colour Boxes.

Japanned Copper Water Bottles, with plated insides.

Large size	ditto	ditto
Extra large size	ditto	ditto

Water Cups, or Dippers, japanned, various.

WATER COLOURS.

PREPARED IN CAKES AND HALF CAKES.

PRICE.

WHOLE CAKES, 1s. Each.

HALF CAKES, 6d. Each.

WHOLE CAKE.

HALF CAKE.

Antwerp Blue
Bistre
Burnt Sienna
Brown Pink
Blue Black
Burnt Umber
British Ink
Brown Ochre
Burnt Roman Ochre
Chrome Yellows, 1, 2, and 3
Cologne Earth
Dragon's Blood
Emerald Green
French Green
Gamboge
Green Bice
Hooker's Green, No. 1
Hooker's Green, No. 2
Indigo
Indian Red
Italian Pink
Ivory Black
King's Yellow
Lamp Black

Light Red
Neutral Tint
Naples Yellow
New Blue
Olive Green
Orpiment
Prussian Blue
Prussian Green
Payne's Grey
Raw Sienna
Raw Umber
Roman Ochre
Red Lead
Red Ochre
Red Chalk
Sap Green
Terre Verte
Vandyke Brown
Venetian Red
Vermillion
Verdigris
Yellow Ochre
Yellow Lake

WATER COLOURS, continued.

WHOLE CAKES, **1s. 6d.** HALF CAKES, **9d.**

Sepia	Mars Yellow
Warm Sepia	Crimson Lake
Roman Sepia	Scarlet Lake
Brown Madder	Purple Lake
Constant White	Chalon's Brown
Chinese White	Black Lead
Indian Yellow	Scarlet Vermillion
Mars Brown	

WHOLE CAKES, **2s.** HALF CAKES, **1s.**

Cobalt Blue.

WHOLE CAKES, **3s.** HALF CAKES, **1s. 6d.**

Green Oxide of Chromium	Pink Madder
Lemon Yellow	Rose Madder
French Blue	Intense Blue

WHOLE CAKES, **5s.** HALF CAKES, **2s. 6d.**

Mars Orange	Ultramarine Ash
Pure Scarlet	Carmine
Burnt Carmine	Gallstone
Smalt	Cadmium Yellow
Purple Madder	Orange Vermillion

WHOLE CAKES, **21s.** HALF CAKES, **10s. 6d.**

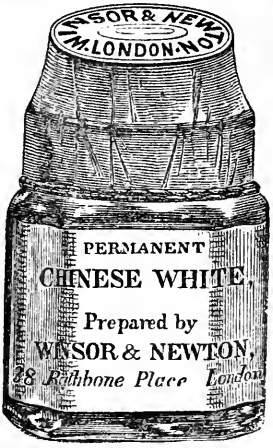
Genuine Ultramarine.

Winsor and Newton beg to invite attention to their Stock of Mahogany and Rosewood Water-Colour Boxes, elegantly fitted, embracing every variety, from 4*s*. to £10.

PERMANENT CHINESE WHITE.

PREPARED ONLY BY WINSOR AND NEWTON.

A PREPARATION OF WHITE OXIDE OF ZINC,



THE MOST ELIGIBLE WHITE PIGMENT FOR WATER COLOUR PAINTERS.

In Bottles or Tubes, price 1s. 6d. each.

The White Oxide of Zinc is pronounced by the highest chemical authorities to be one of the most unchangeable substances in nature. Neither impure air, nor the most powerful re-agents, affect its whiteness. It is not injured by, nor does it injure, any known pigments.

It has long been pointed out by chemists as a most desirable substance for the Artists' use, provided sufficient body could be imparted to it; but until lately the want of this necessary quality rendered it unavailable. In WINSOR AND NEWTON'S preparation, termed Chinese White, this desideratum has been attained. The Chinese White, by combining body and permanency, is rendered far superior to those whites known as "Constant" or as "Permanent" Whites; and not having their clogging or pasty qualities, it works and washes with freedom.

The great body it possesses gives it the property of drying on paper of the same tone as it appears when first laid on, and thus, when used, either alone or in compound tints, it does not deceive the Artist like other whites, by drying up three or four tones higher than when wet.

The Chinese White is peculiarly available in mixing with any of the Water Colours in use, and particularly with the Moist Colours, thereby forming at pleasure an extensive range of body colours of a very superior kind.

The following Paragraphs are extracted from Mr. Harding's "Principles and Practice of Art."

"When the Oxide of Zinc, which is prepared by Winsor and Newton under the name of 'Chinese White,' was first put into my hands, some years ago, I applied to one of my friends, whose name as a chemist and philosopher is amongst the most distinguished in our country, to analyze it for me, and to tell me if I might rely on its durability; the reply was, that if it would in all other respects answer the purposes I required of it, I had nothing to fear on account of its durability."

"This is an invaluable pigment." "It is hardly possible to overrate the value of 'Opaque White' in Water Colours when judiciously used."

LIQUID COLOURS AND MEDIUMS.

CONSTANT WHITE.

(Sulphate of Barytes.)

This is an extremely white pigment, but does not possess the body of Chinese White; it is generally used for high lights, &c., in Landscape and Miniature Painting.

Price 1*s.* 6*d.* the Bottle.

ASPHALTUM.

Prepared for the use of Water Colour Painters.

Messrs. Winsor and Newton are the only Manufacturers who have succeeded in bringing this rich pigment to a state fit for the Water Colour Painter's use.

Price 1*s.* 6*d.* the Bottle.

PROUT'S LIQUID BROWN.

A BEAUTIFUL TRANSPARENT BROWN FOR WATER COLOURS.

Price 1*s.* 6*d.* the Bottle.

INDELIBLE BROWN INK.

For Outlines or for Sketching.

This rich and permanent Ink is found to be of great service to the Architectural Artist, as the outline, or ornamental design, drawn with it (even if the Ink be diluted with water to the palest tint), is not, when dry, effaced by continual washings.

Price 1*s.* 6*d.* the Bottle.

WATER COLOUR MEGILP.

Invented and Prepared by Winsor and Newton, for the use of Water Colour Painters.

A most desirable medium, imparting additional depth, brilliancy, and transparency in Water Colour Painting, improving the working of the colours, and preventing them running one into another.

Price 2*s.* the Bottle.

COLOURLESS LIQUID OX GALL.

This limpid Extract of Gall possesses all the strength and properties of the Gall as it is usually sold in the paste state, but is deprived of its unpleasant qualities.

Price 1*s.* the Bottle.

Prepared Gum Water.

Price: small size, 6*d.*; middle ditto, 1*s.*; large ditto, 1*s.* 6*d.* the Bottle.

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MANUFACTURED BY

WINSOR AND NEWTON,

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These Pencils are unrivalled for depth, uniformity, and richness of colour, firmness, and delicacy of tint; they are remarkable for the varieties of hardness and evenness of texture, their ready and complete erasure, and the truth and certainty to which they are made to answer to the degree or letter they represent, from the HHHH. Pencil for Architect or Wood Engraver's outline, to the BBBB. for the broadest and deepest tones required in Pencil-Drawing.

—o—

H. Moderately hard (used for light Sketching) . . .
HH. A degree harder (for Outlines and fine Drawing) .
HHH. Very hard (for Architectural Drawing) . . .
HHHH. Extremely hard (for Engineering, or Drawing on Wood)
FF. Used for Light Shading . . . . . .
F. Fine Drawing (firm) . . . . . .
HB. Hard and Black (deeper shade than F) . . .
EHB. Same as HB., with thicker lead. . . . .
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BB. Softer ditto (for deep Shading) . . . .

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BBB. Intensely Black (for extra deep Shading), broad lead, 1*s.* each.
BBBB. Same as BBB., with very broad lead, 1*s.* 6*d.* each.

PATENT LEAD DRAWING PENCILS.

(SECOND QUALITY DRAWING PENCILS.)

MANUFACTURED OF COMPRESSED PREPARED PLUMBAGO.

HHH.	Very hard	3d. Each.
HH.	Hard	
H.	Rather hard	
F.	Free working	
HB.	Hard and Black	
B.	Black for Shading	
BB.	Soft and Black	
BBB.	Very Black	6*d.* ea.
BBBB.	Very Broad Lead and Black	9*d.* „
BBBBBB.	Very Thick Lead and Black	1*s.* „

These Pencils possess nearly all the best qualities of the old genuine Cumberland Lead. They are well adapted for Drawing Masters, Schools, and Students.

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Manufactured by WINSOR and NEWTON, with

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Selected by Mr. J. D. Harding, and stamped with his Name.

WINSOR AND NEWTON beg respectfully to call the attention of Artists, Amateurs, Architects, Engineers, Surveyors, &c., to the Drawing Pencils which they manufacture of Brockedon's Patent Pure Cumberland Lead, particular sorts of which have been selected by Mr. Harding, and with which they are supplied, by that gentleman's permission: to the Pencils thus manufactured, Winsor and Newton have authority to attach Mr. Harding's name.

Sold in Cases, containing a Set of Six Pencils, of various thickness of Lead.

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(OF THE BEST QUALITY.)

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Royal	24 „ 19
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Imperial	30 „ 21
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Atlas	33 „ 26
Double Elephant	40 „ 26
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These Papers are also kept Hotpressed for Pencil Drawing.

DRAWING PAPERS OF EXTRA WEIGHTS AND THICKNESS, FOR WATER COLOURS.

Whatman's Drawing Paper, Imperial size (30 in. by 21), THICK } weighing 90lbs. to the ream. }
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Ditto, ditto, and rough „ 140lbs. „
Ditto, Double Elephant, thick
Ditto, Double Elephant, extra thick
Harding's Pure Drawing Paper, stamped "J. D. H."
Ditto ditto extra thick ditto
Imperial Drawing Cartridge
Ditto Engineer's thick Cartridge
Ditto ditto thin ditto
Log Cartridge

COLOURED DRAWING AND CRAYON PAPERS.

Imperial Crayon Papers, extra stout, including a great variety of Tints, adapted for Pencil, Chalk, and Crayon Drawing, as well as Tinting and Sketching in Water Colours.

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Ditto ditto, HAND MADE, adapted for Academy Drawing and Water Colours.

Pattern Books, containing samples of all the Tints in Stock, upwards of 40 in number, and to which numbers are affixed for the purpose of ordering, may be had on application.

FINEST FRENCH SABLE BRUSHES.

For Water Colour Painting.

BROWN SABLE HAIR.

Domed Points.

THE BRUSHES DESCRIBED ARE ALL THE SAME SIZES AS THE ENGRAVINGS.

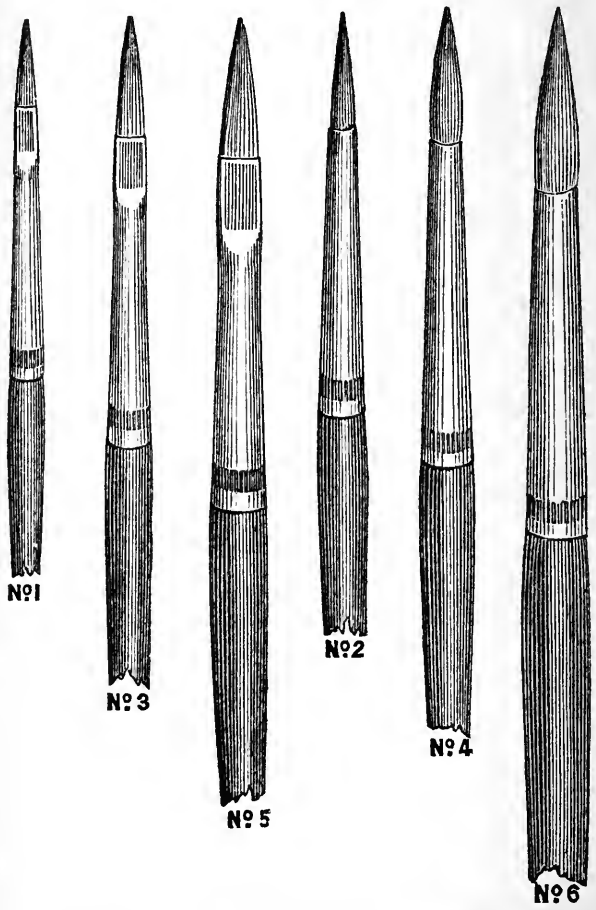
Messrs. Winsor and Newton solicit especial attention to their Stock of Water Colour Sable Brushes, which will be found most Complete, and of the Best Quality. They are selected with great care from the Stocks of the best makers in Paris.

WATER COLOUR BRUSHES.

Red or Brown Sable Hair.

IN GERMAN SILVER FERRULES, WITH POLISHED EBONY HANDLES.

FLAT OR ROUND.



FOR THE LARGER SIZES OF THE SAME DESCRIPTION OF BRUSH, SEE NEXT PAGE.

The Engravings show various sizes of the Brushes, to which numbers are attached, the remaining sizes can be readily determined from them, No. 6 being the largest, and No. 1 the smallest, either in flat or round.

WATER COLOUR BRUSHES.

FINEST BROWN SABLES.

LARGE SIZES.

In German Silver Ferrules, with long Polished Ebony Handles.

Round.	Flat.
No. 1.	No. 1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.

The Engravings represent a No. 4 Round and a No. 3 Flat Brush. The other sizes being in proportion, larger or smaller.

BROWN DYED SABLES.

In Tin Ferrules, Black Polished Handles. Flat or Round.

No. 1.	No. 6.
2.	7.
3.	8.
4.	9.
5.	

These Brushes are the same Sizes as the Sables in German Silver Ferrules. See previous page.

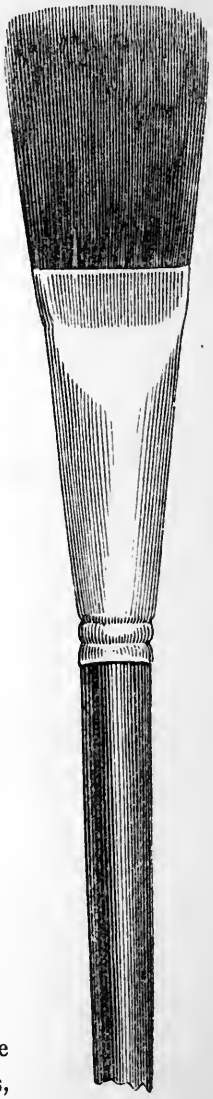
WATER COLOUR BRUSHES,

FOR SKIES, WASHES, AND LARGE WORKS.

A.

A.—Large Round Wire-bound Brush, made of Siberian Hair, a most useful Brush where large washes of colour are required.

B.—Large Flat Brush in Tin, made of Dyed Sable Hair, suitable for skies, foregrounds, and large works.



B.

RED SABLE BRUSHES.

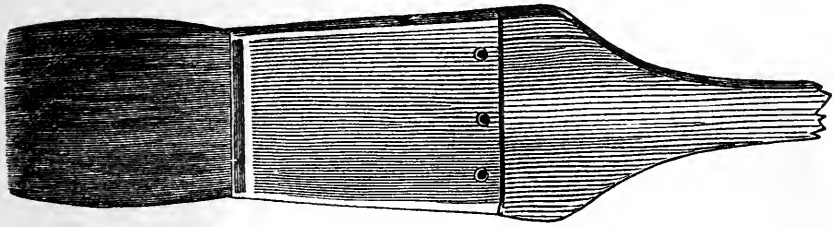
IN QUILL.

Large Swan Quill
Middle ditto
Small ditto
Extra Small ditto
Goose Quill
Duck ditto
Crow ditto
Pigeon ditto, for Lithography

These Brushes correspond in size and form with the Brown Sables, as represented on page 17.

CAMEL HAIR BRUSHES IN TIN.

Flat.



¼	inch wide	1¾	inch wide
½	,,	2	,,
¾	,,	2½	,,
1	,,	3	,,
1¼	,,	3½	,,
1½	,,	4	,,

CAMEL HAIR PENCILS.

Goose Quill.

Duck Quill.

Crow Quill.

Superfine Camel Hair Pencils, assorted
Ditto, ditto, Goose, Duck, or Crow
Ditto, ditto, small Swan Quill
Ditto, ditto, large Swan Quill

FRENCH SIBERIAN HAIR BRUSHES.

TIED WITH SILVER WIRE.

Large Swan Quill	Goose Quill
Middle ,,	Duck ,,
Small ,,	Crow ,,

These Brushes correspond in Size and Form with the Sables in Quill.
See Page 17.

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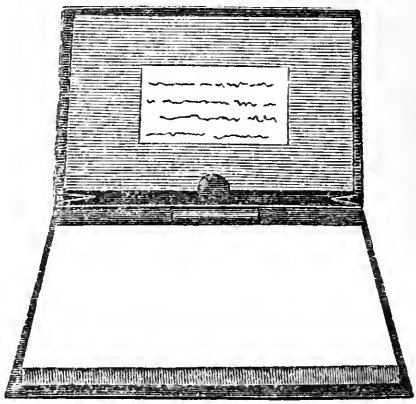

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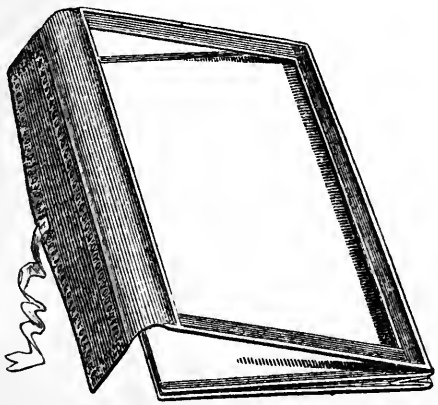

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